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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,798	03/30/2004	Rick C. Stevens	5788EA205	6045

7590 12/14/2005

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EXAMINER
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HUGHES, JAMES P

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/812,798

Applicant(s)

STEVENS ET AL.

Examiner

James P. Hughes

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 2, 10, 12, 14, 15, 17, 19, 20, 22, 23, 26, 27, 29, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Mershon et al. (2005/0063637). Mershon teaches an optical coupling element and method of forming a light conducting path between substrates comprising; a first optical substrate (e.g. 214, 204, 206, or 208) on a second optical substrate (e.g. 204, 206, or 208), forming tubular vias in the substrates, extending a translucent optical element into the via. Said optical coupling element comprising two entry/exit faces and a mirror fixedly embedded which may redirect light in at least two different directions between layers of the device. (See e.g. paragraph 18-32 and Figs. 2, 5, and 6)

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-9, 11, 13, 16-18, 21, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mershon et al. (2005/0063637) in view of Allman et al.

(6,324,313). Mershon teaches an optical coupling element and method of forming a light conducting path between substrates as discussed above. However, Mershon does not explicitly teach the coupling of light (and the corresponding additional structures) between multiple layers in an optical printed circuit board. However, as multiple layer printed circuit boards are common in the art (e.g. as taught by Mershon) and coupling between multiple layers is also known to those skilled in the art (e.g. Allman et al. 6,324,313) it would have been obvious to one of ordinary skill in the art at the time of the invention to extend the two layer optical interconnect of Mershon into three or more layers because this would allow efficient operation of a multi-layer optical printed circuit.

3. Claims 17 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mershon et al. (2005/0063637) in view of Thomas. (5, 198,008). Mershon teaches an optical coupling element and method of forming a light conducting path between substrates as discussed above. However, Mershon does not explicitly teach employing buried or blind vias. As such vias are well known in the art, for example as taught by Thomas, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ buried and blind vias in the invention of Mershon because this would allow greater flexibility in circuit design and construction.

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*Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ouchi (2004/0114854) and (2002/0109074) teaches a layered optical waveguide device. (Abstract) Uchida teaches a planar optical waveguide device (2003/0152354).

Additionally there are several other pieces of relevant art listed on the attached Notice of References Cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James P. Hughes  
Patent Examiner  
Art Unit 2883



Frank G. Font  
Supervisory Patent Examiner  
Technology Center 2800